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Houjou

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(54) **SOCIAL NETWORK SERVICE SYSTEM, IMAGE DISPLAY METHOD, AND COMPUTER-READABLE STORAGE MEDIUM**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 309 days.

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Feb. 28, 2013 (JP) 2013-039817

(51) **Int. Cl.**
G06F 15/16 (2006.01)
H04L 12/58 (2006.01)
G06Q 50/00 (2012.01)

(52) **U.S. Cl.**
CPC ***H04L 51/32*** (2013.01); ***G06Q 50/01*** (2013.01)

(58) **Field of Classification Search**
CPC G06Q 50/01; H04L 51/32
USPC 709/204; 382/305
See application file for complete search history.

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(57) **ABSTRACT**

A social network service system includes a server wherein a terminal of a member is connectable to the server. The server includes a memory configured to store a home screen includes top image data for each member, a selector configured to select a type of an image processing, and a processor configured to process, at a predetermined timing, the top image data of a member in accordance with the type of the image processing which is selected by the selector.

15 Claims, 17 Drawing Sheets

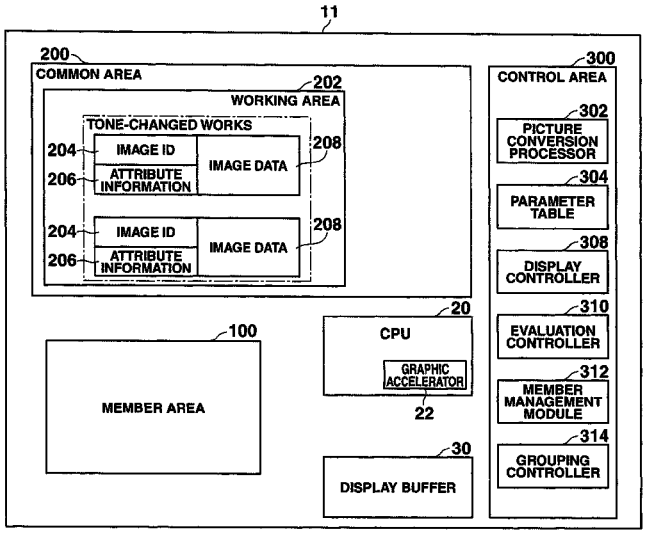

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FIG.1
PRIOR ART

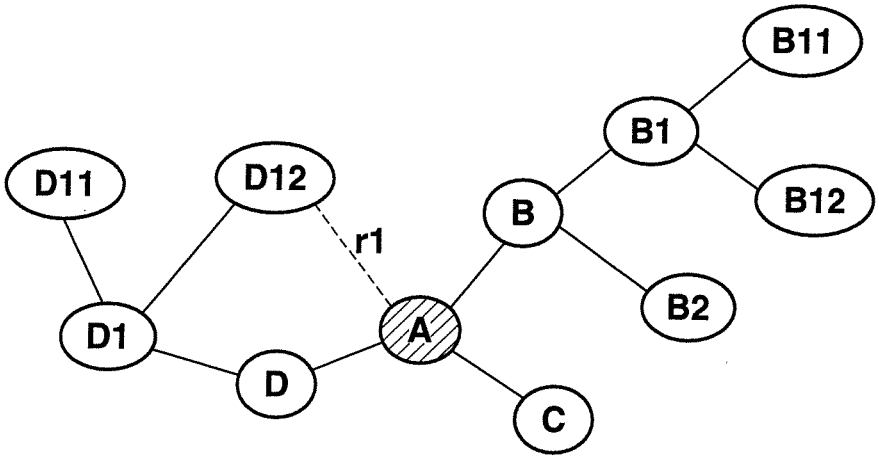


FIG.2
PRIOR ART

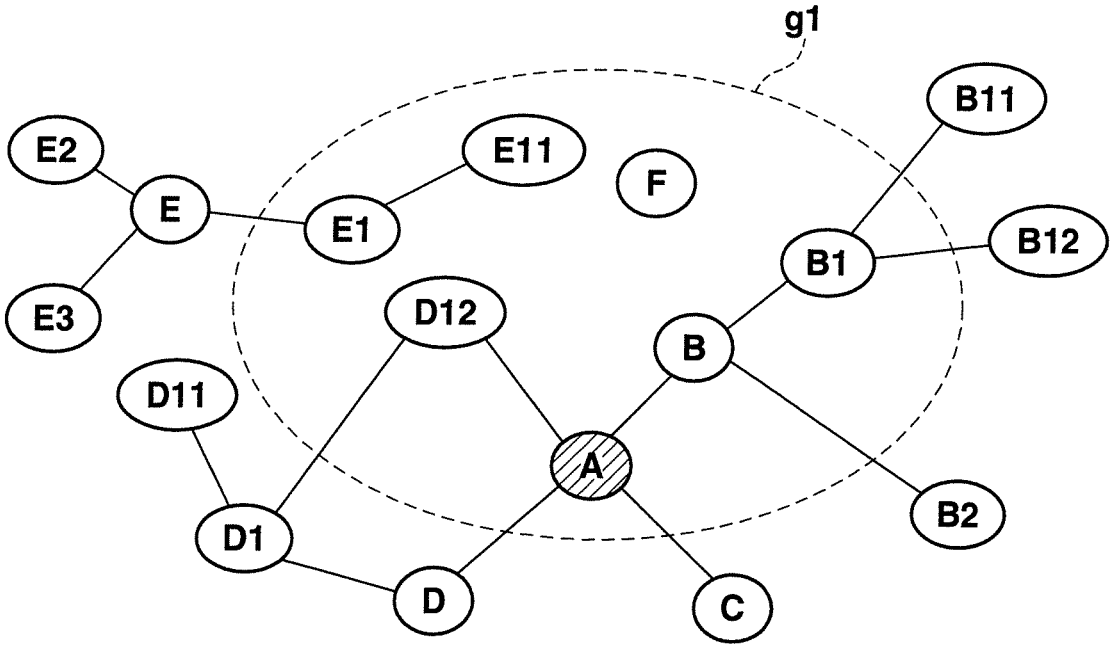


FIG.3

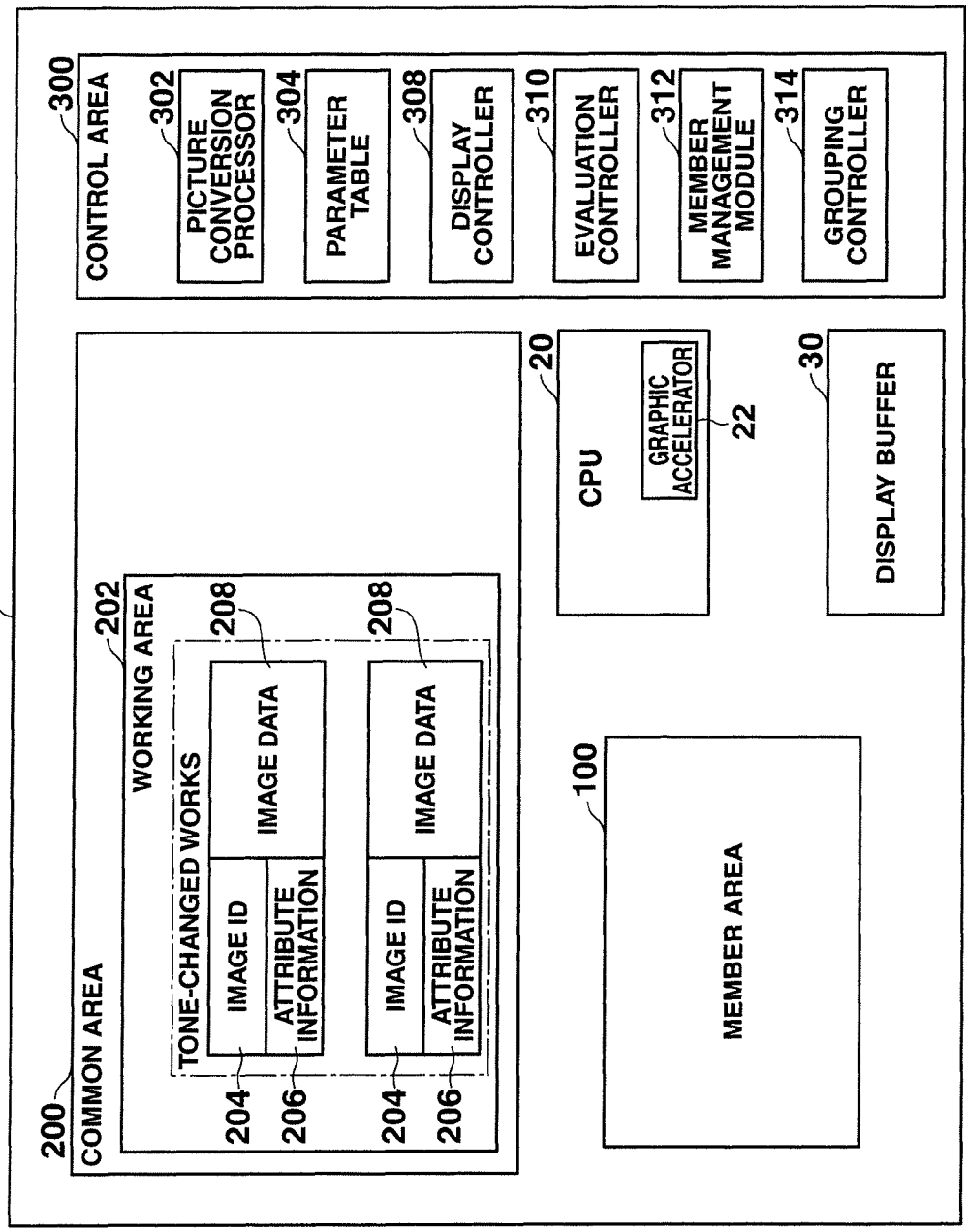

11
300
CONTROL AREA
302
PICTURE CONVERSION PROCESSOR
304
PARAMETER TABLE
308
DISPLAY CONTROLLER
310
EVALUATION CONTROLLER
312
MEMBER MANAGEMENT MODULE
314
GROUPING CONTROLLER
200
COMMON AREA
202
WORKING AREA
TONE-CHANGED WORKS
208
IMAGE DATA
IMAGE ID
ATTRIBUTE INFORMATION
204
206
208
IMAGE DATA
IMAGE ID
ATTRIBUTE INFORMATION
204
206
20
CPU
GRAPHIC ACCELERATOR
22
30
DISPLAY BUFFER
100
MEMBER AREA

FIG.4

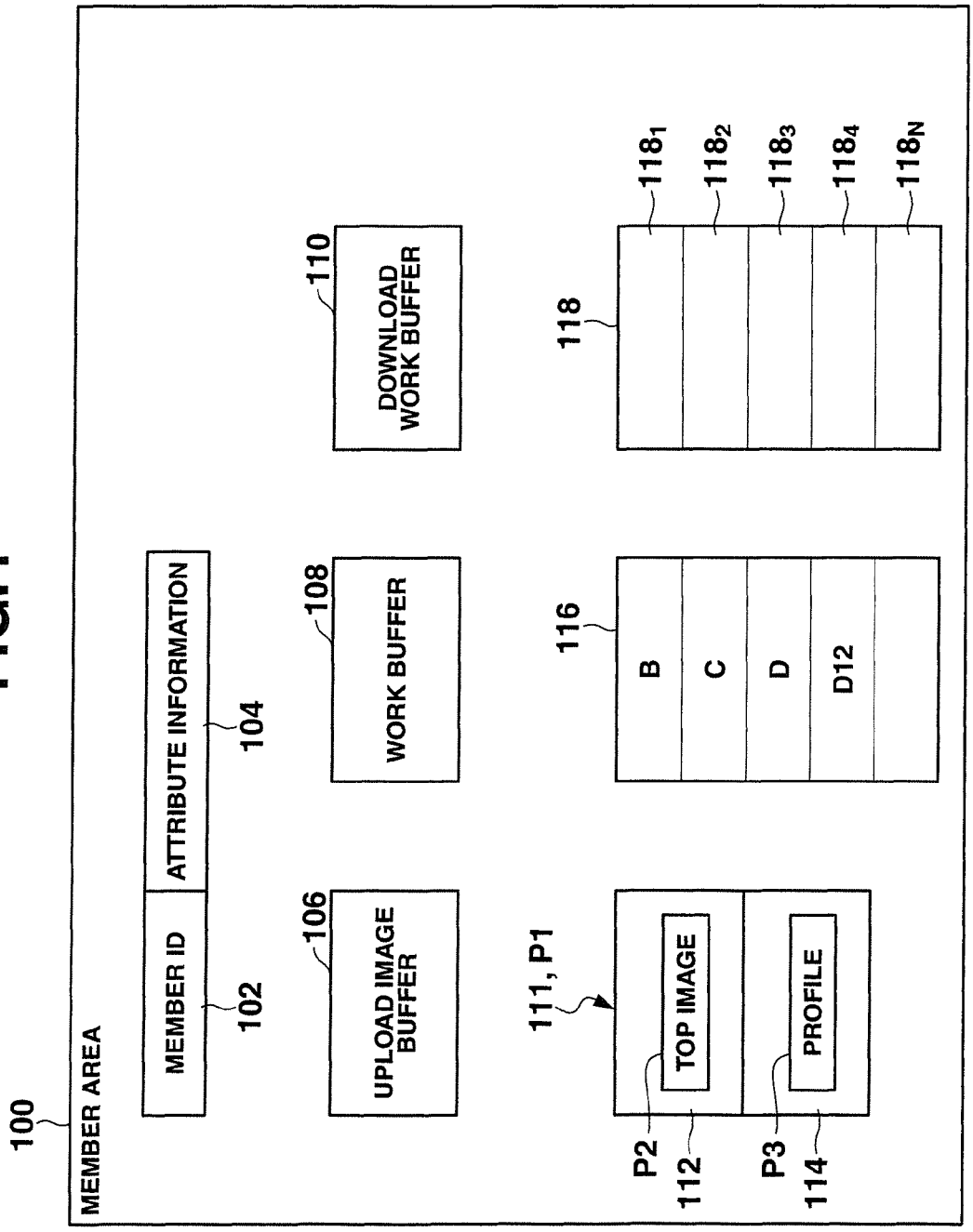

100
MEMBER AREA
MEMBER ID
102
ATTRIBUTE INFORMATION
104
UPLOAD IMAGE BUFFER
106
WORK BUFFER
108
DOWNLOAD WORK BUFFER
110
111, P1
TOP IMAGE
P2
112
PROFILE
P3
114
116
B
C
D
D12
118
118_1
118_2
118_3
118_4
118_N

FIG.5

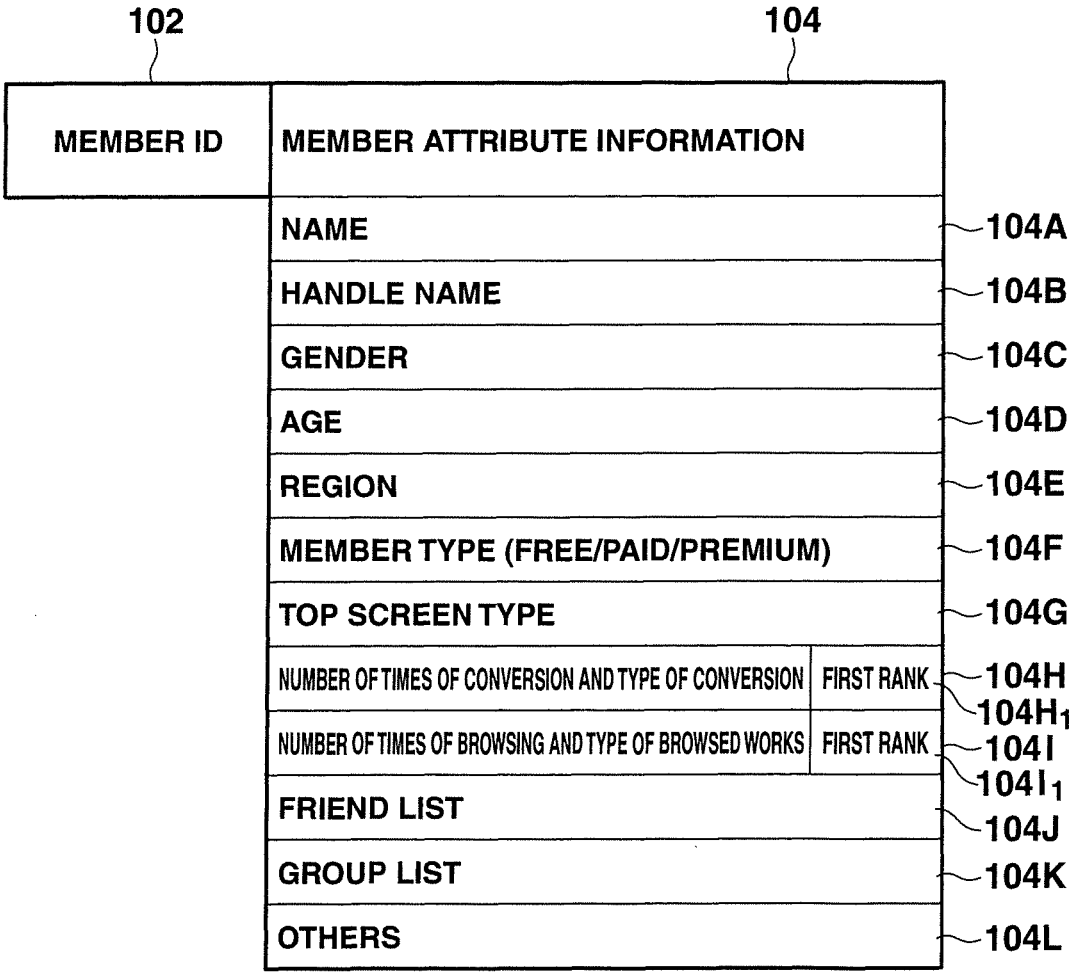

102
104
MEMBER ID
MEMBER ATTRIBUTE INFORMATION
NAME
104A
HANDLE NAME
104B
GENDER
104C
AGE
104D
REGION
104E
MEMBER TYPE (FREE/PAID/PREMIUM)
104F
TOP SCREEN TYPE
104G
NUMBER OF TIMES OF CONVERSION AND TYPE OF CONVERSION
FIRST RANK
104H
104H1
NUMBER OF TIMES OF BROWSING AND TYPE OF BROWSED WORKS
FIRST RANK
104I
104I1
FRIEND LIST
104J
GROUP LIST
104K
OTHERS
104L

FIG.6

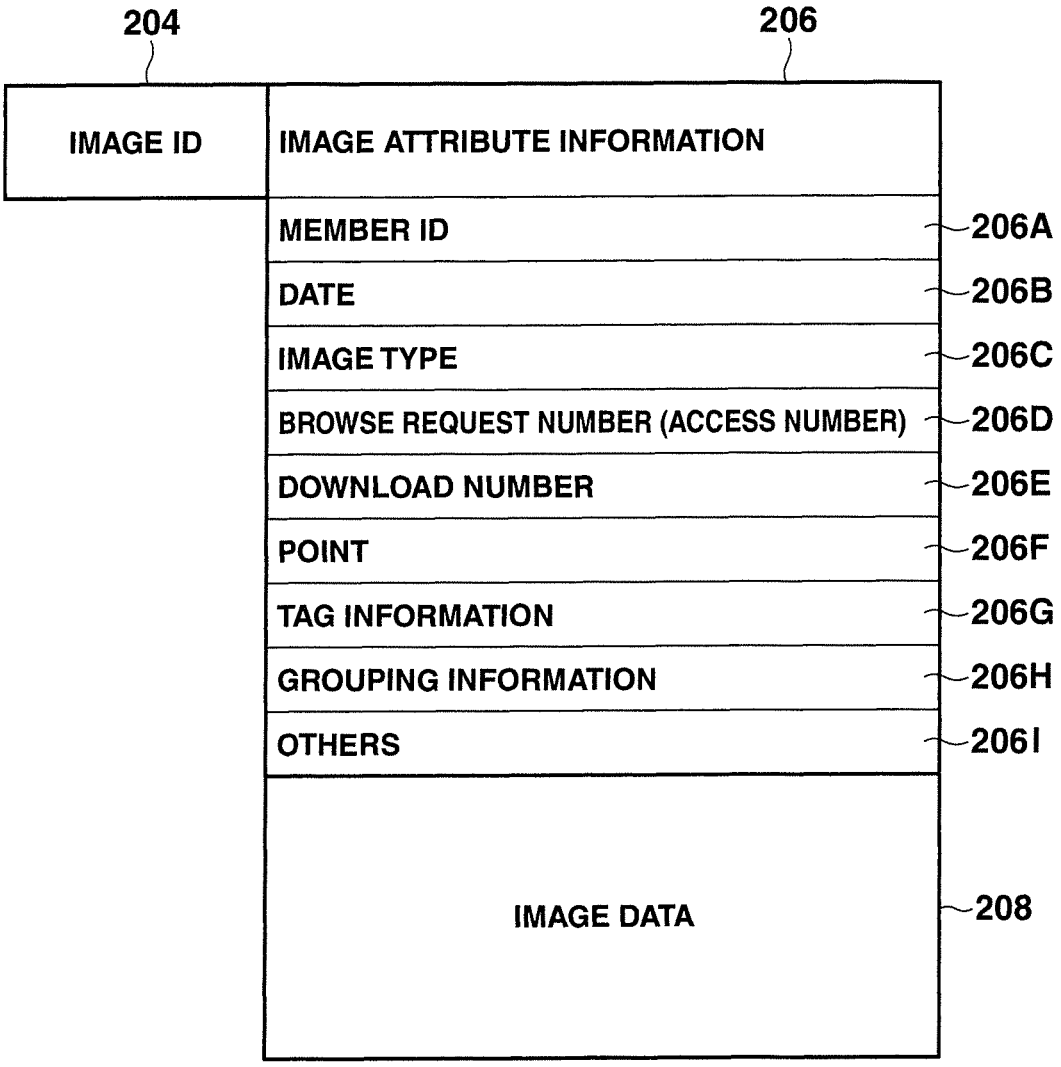

204
206
IMAGE ID
IMAGE ATTRIBUTE INFORMATION
MEMBER ID
206A
DATE
206B
IMAGE TYPE
206C
BROWSE REQUEST NUMBER (ACCESS NUMBER)
206D
DOWNLOAD NUMBER
206E
POINT
206F
TAG INFORMATION
206G
GROUPING INFORMATION
206H
OTHERS
206I
IMAGE DATA
208

FIG.7

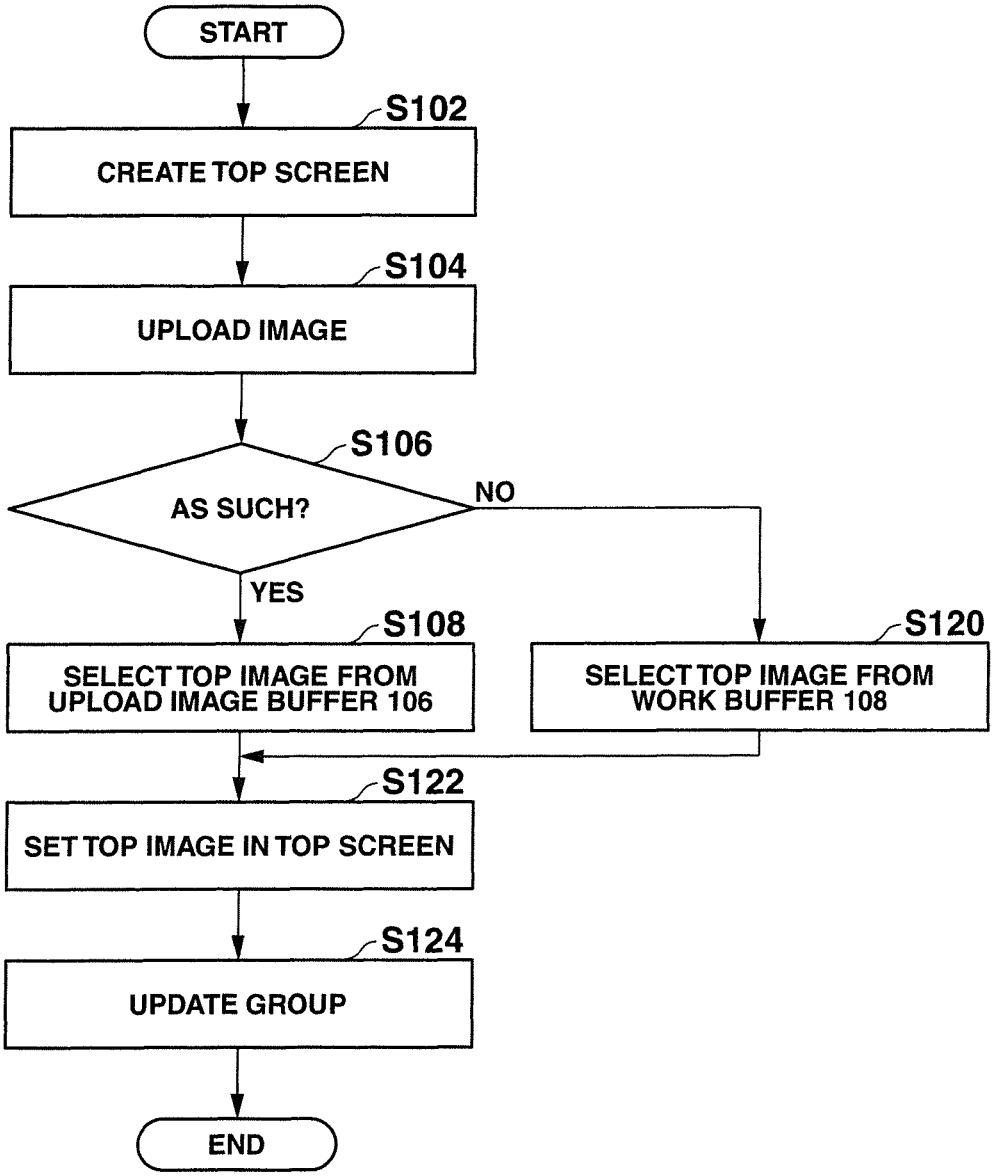

START
S102
CREATE TOP SCREEN
S104
UPLOAD IMAGE
S106
AS SUCH?
NO
YES
S108
SELECT TOP IMAGE FROM UPLOAD IMAGE BUFFER 106
S120
SELECT TOP IMAGE FROM WORK BUFFER 108
S122
SET TOP IMAGE IN TOP SCREEN
S124
UPDATE GROUP
END

FIG.8A

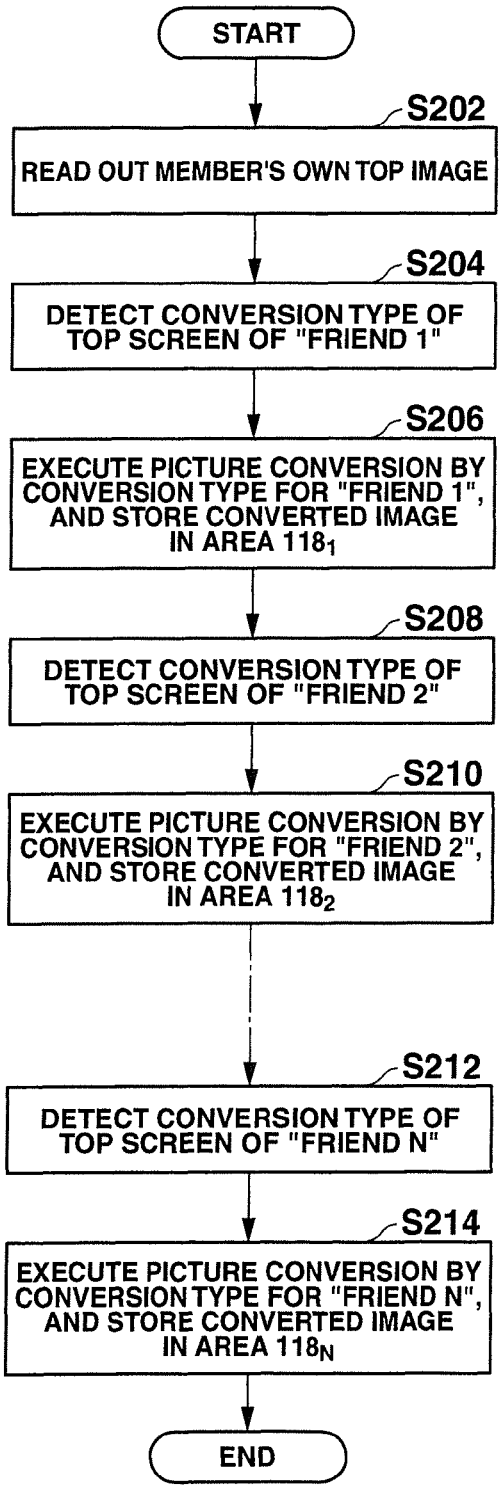

START
S202
READ OUT MEMBER'S OWN TOP IMAGE
S204
DETECT CONVERSION TYPE OF TOP SCREEN OF "FRIEND 1"
S206
EXECUTE PICTURE CONVERSION BY CONVERSION TYPE FOR "FRIEND 1", AND STORE CONVERTED IMAGE IN AREA 118$_1$
S208
DETECT CONVERSION TYPE OF TOP SCREEN OF "FRIEND 2"
S210
EXECUTE PICTURE CONVERSION BY CONVERSION TYPE FOR "FRIEND 2", AND STORE CONVERTED IMAGE IN AREA 118$_2$
S212
DETECT CONVERSION TYPE OF TOP SCREEN OF "FRIEND N"
S214
EXECUTE PICTURE CONVERSION BY CONVERSION TYPE FOR "FRIEND N", AND STORE CONVERTED IMAGE IN AREA 118$_N$
END

FIG.8B

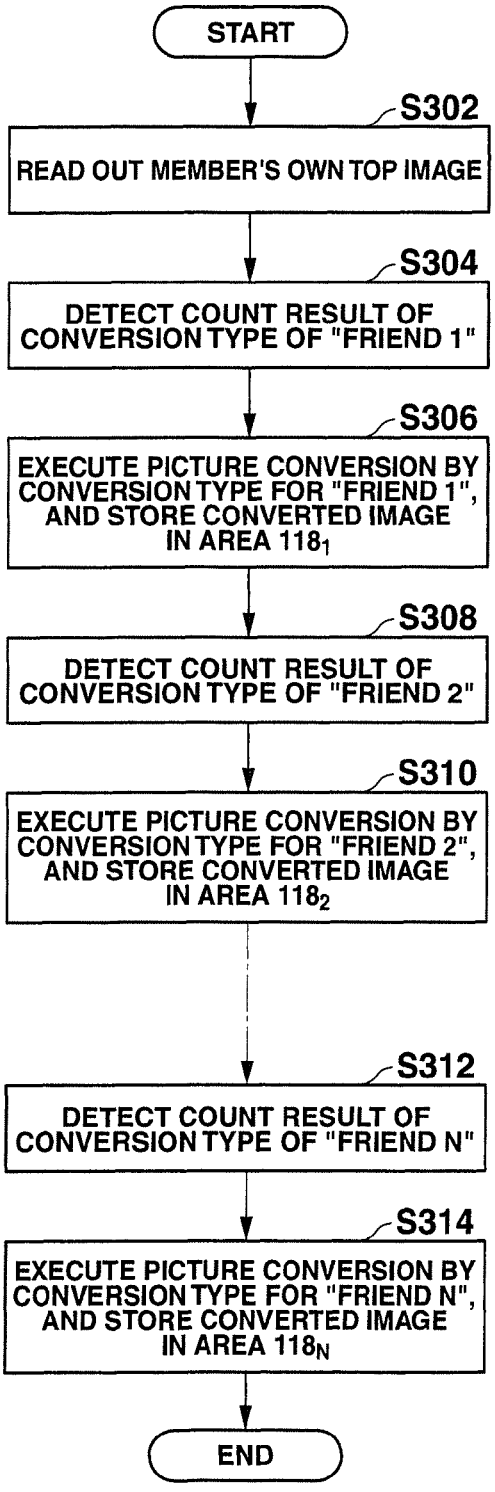

START
S302
READ OUT MEMBER'S OWN TOP IMAGE
S304
DETECT COUNT RESULT OF CONVERSION TYPE OF "FRIEND 1"
S306
EXECUTE PICTURE CONVERSION BY CONVERSION TYPE FOR "FRIEND 1", AND STORE CONVERTED IMAGE IN AREA 118$_1$
S308
DETECT COUNT RESULT OF CONVERSION TYPE OF "FRIEND 2"
S310
EXECUTE PICTURE CONVERSION BY CONVERSION TYPE FOR "FRIEND 2", AND STORE CONVERTED IMAGE IN AREA 118$_2$
S312
DETECT COUNT RESULT OF CONVERSION TYPE OF "FRIEND N"
S314
EXECUTE PICTURE CONVERSION BY CONVERSION TYPE FOR "FRIEND N", AND STORE CONVERTED IMAGE IN AREA 118$_N$
END

FIG.9

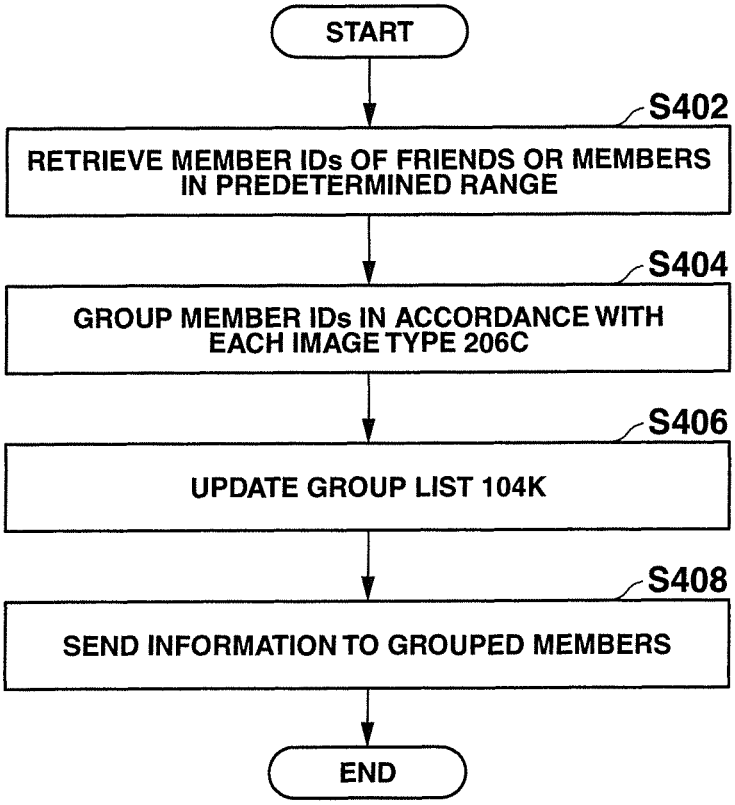

START
S402
RETRIEVE MEMBER IDs OF FRIENDS OR MEMBERS IN PREDETERMINED RANGE
S404
GROUP MEMBER IDs IN ACCORDANCE WITH EACH IMAGE TYPE 206C
S406
UPDATE GROUP LIST 104K
S408
SEND INFORMATION TO GROUPED MEMBERS
END

FIG.10

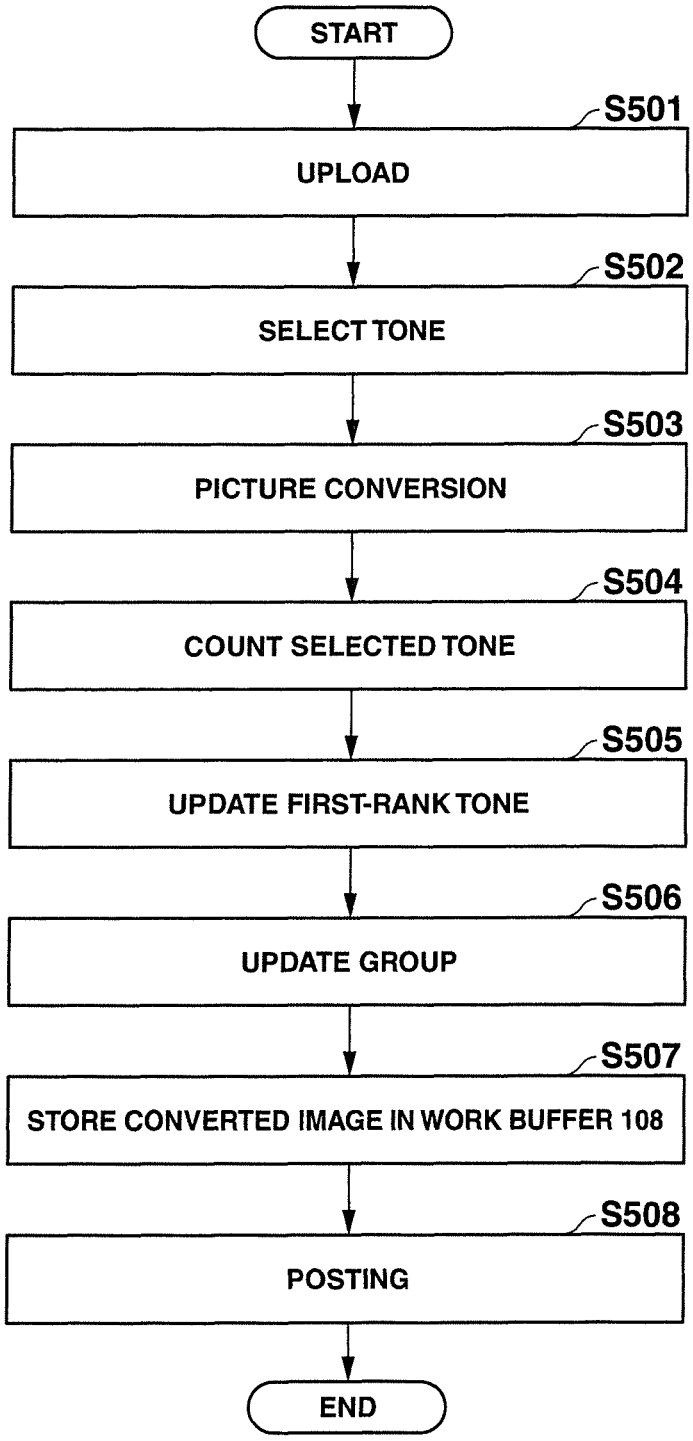

START
S501
UPLOAD
S502
SELECT TONE
S503
PICTURE CONVERSION
S504
COUNT SELECTED TONE
S505
UPDATE FIRST-RANK TONE
S506
UPDATE GROUP
S507
STORE CONVERTED IMAGE IN WORK BUFFER 108
S508
POSTING
END

FIG.11

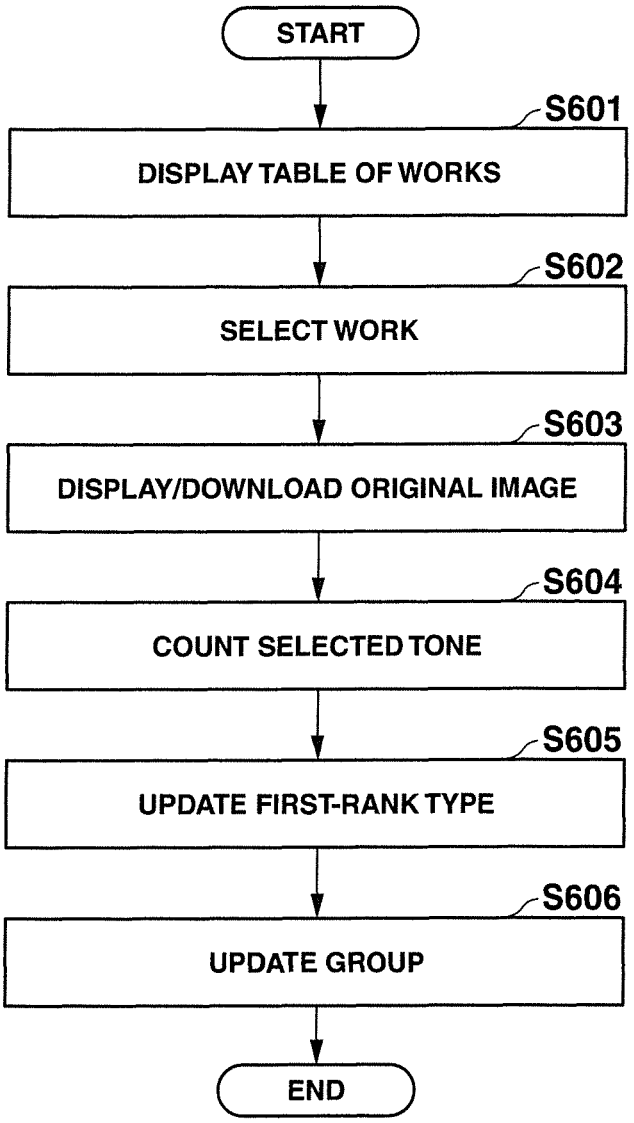

START
S601
DISPLAY TABLE OF WORKS
S602
SELECT WORK
S603
DISPLAY/DOWNLOAD ORIGINAL IMAGE
S604
COUNT SELECTED TONE
S605
UPDATE FIRST-RANK TYPE
S606
UPDATE GROUP
END

FIG.12

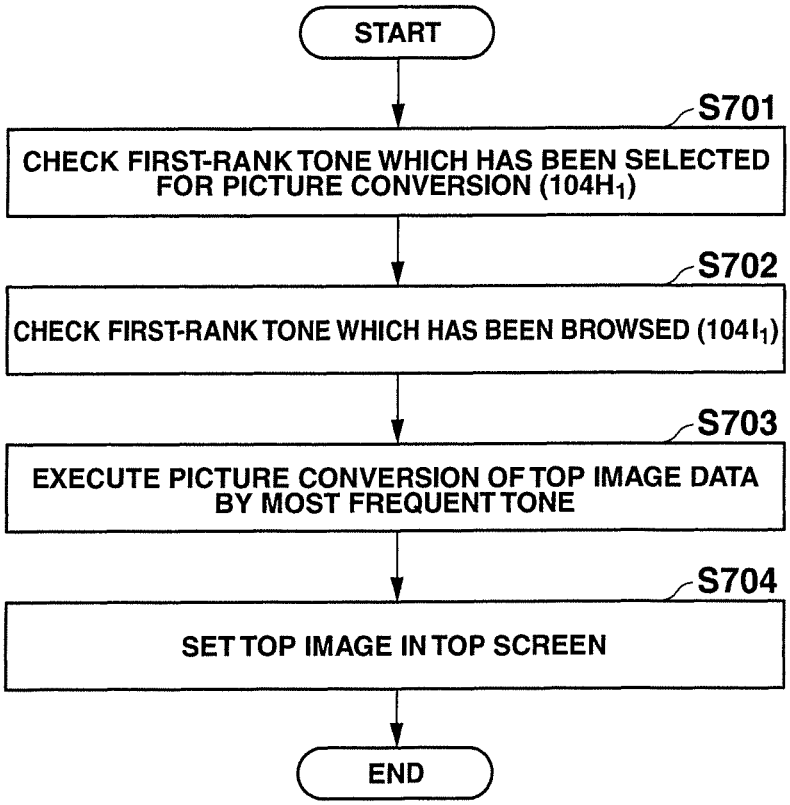

START
S701
CHECK FIRST-RANK TONE WHICH HAS BEEN SELECTED FOR PICTURE CONVERSION (104H1)
S702
CHECK FIRST-RANK TONE WHICH HAS BEEN BROWSED (104I1)
S703
EXECUTE PICTURE CONVERSION OF TOP IMAGE DATA BY MOST FREQUENT TONE
S704
SET TOP IMAGE IN TOP SCREEN
END

FIG.13

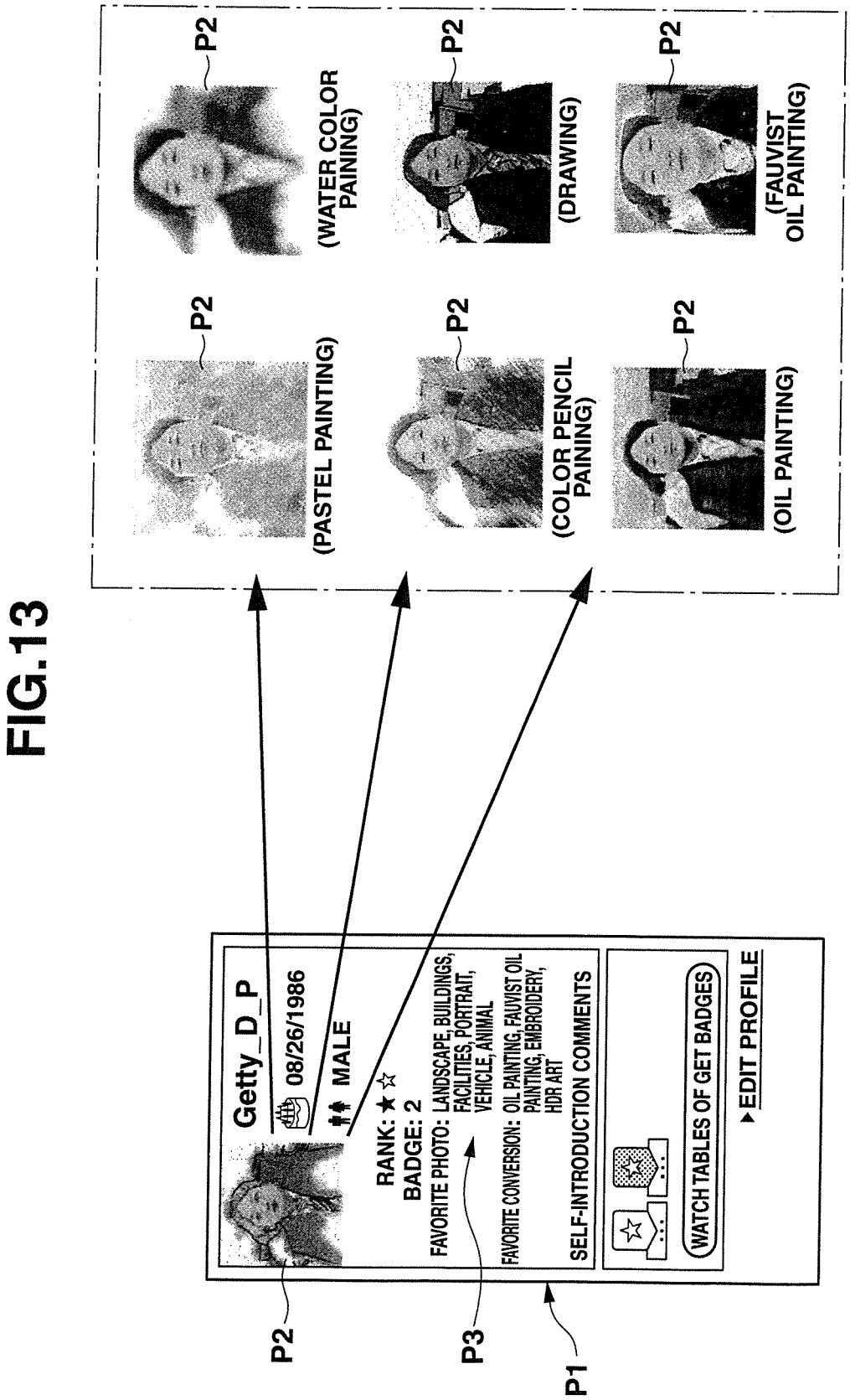

P2
(WATER COLOR PAINING)
P2
(DRAWING)
P2
(FAUVIST OIL PAINTING)
P2
(PASTEL PAINTING)
P2
(COLOR PENCIL PAINING)
P2
(OIL PAINTING)
Getty_D_P
08/26/1986
MALE
RANK: ★☆
BADGE: 2
FAVORITE PHOTO: LANDSCAPE, BUILDINGS, FACILITIES, PORTRAIT, VEHICLE, ANIMAL
FAVORITE CONVERSION: OIL PAINTING, FAUVIST OIL PAINTING, EMBROIDERY, HDR ART
SELF-INTRODUCTION COMMENTS
WATCH TABLES OF GET BADGES
▸EDIT PROFILE
P2
P3
P1

FIG.14

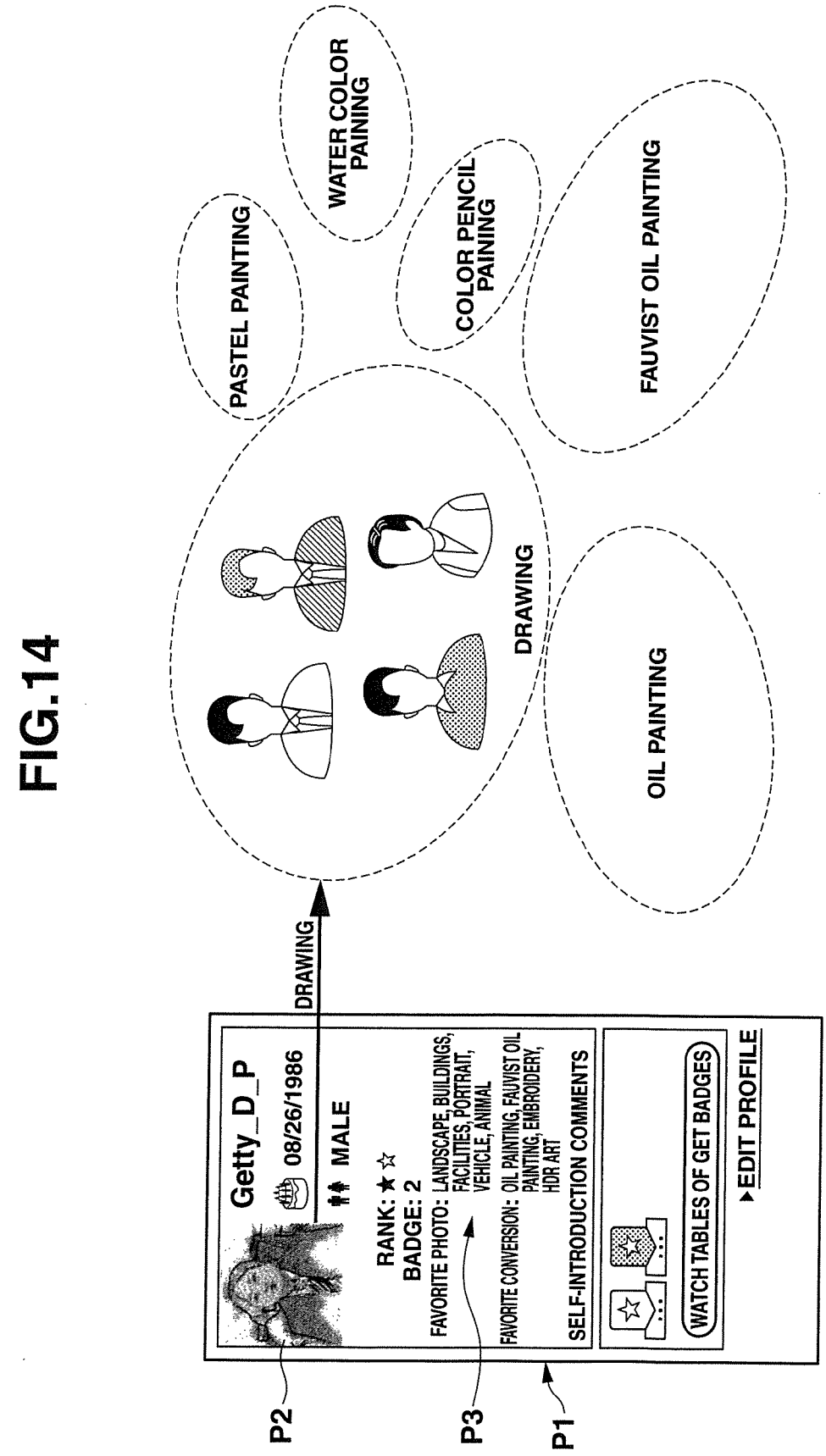

PASTEL PAINTING
WATER COLOR PAINING
COLOR PENCIL PAINING
FAUVIST OIL PAINTING
DRAWING
OIL PAINTING
DRAWING
Getty_D_P
08/26/1986
MALE
RANK: ★☆
BADGE: 2
FAVORITE PHOTO: LANDSCAPE, BUILDINGS, FACILITIES, PORTRAIT, VEHICLE, ANIMAL
FAVORITE CONVERSION: OIL PAINTING, FAUVIST OIL PAINTING, EMBROIDERY, HDR ART
SELF-INTRODUCTION COMMENTS
WATCH TABLES OF GET BADGES
▸EDIT PROFILE
P2
P3
P1

FIG.15

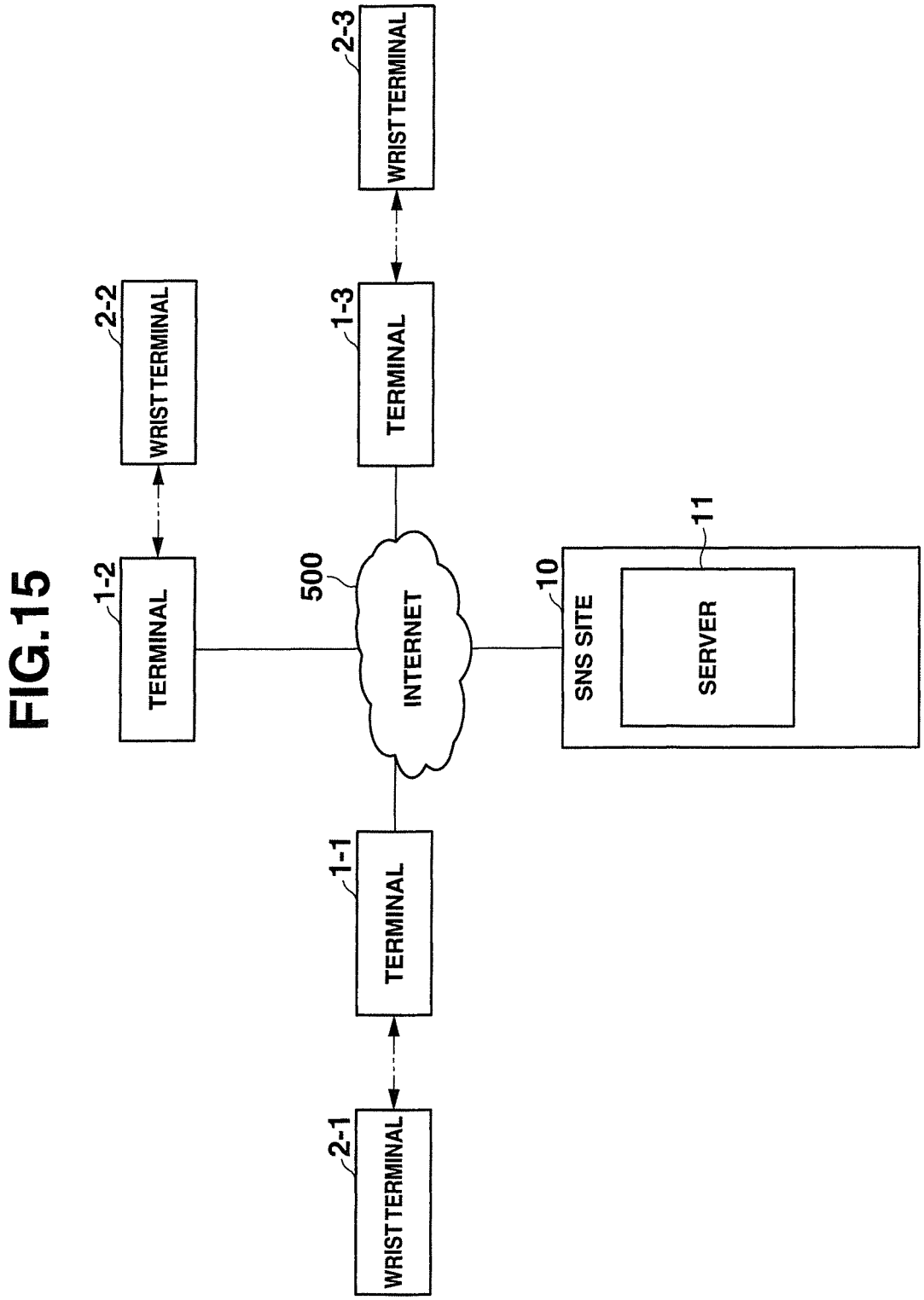

2-3
WRIST TERMINAL
2-2
WRIST TERMINAL
1-3
TERMINAL
1-2
TERMINAL
500
INTERNET
10
SNS SITE
11
SERVER
1-1
TERMINAL
2-1
WRIST TERMINAL

FIG.16A

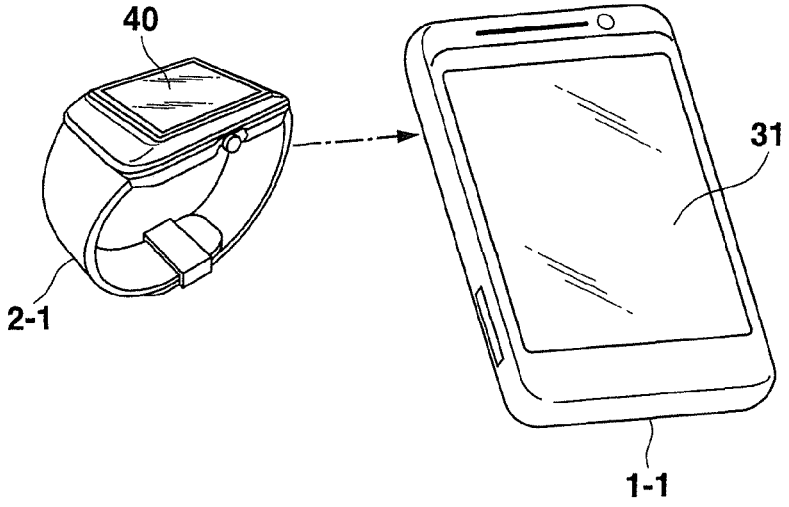


FIG.16B

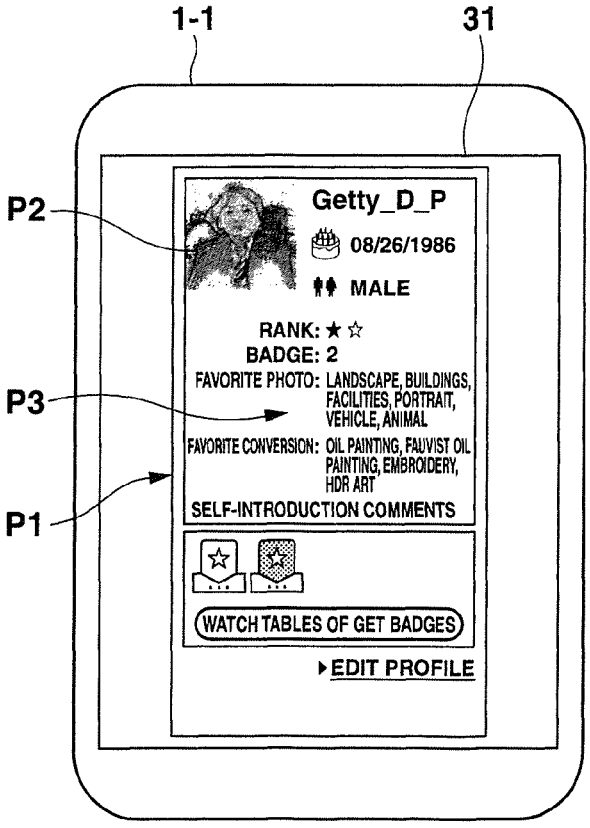


FIG.16C

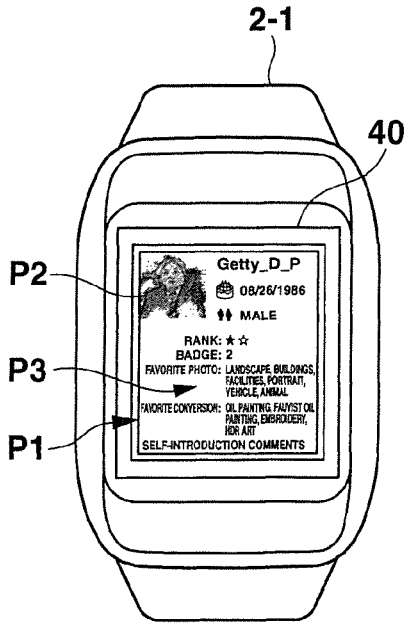


FIG.17A

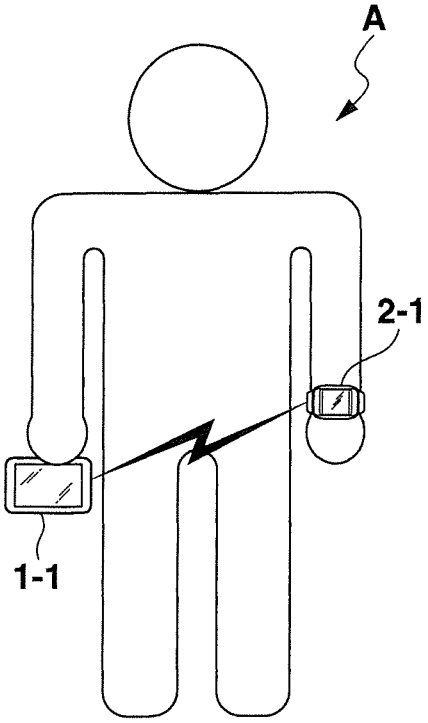


FIG.17B

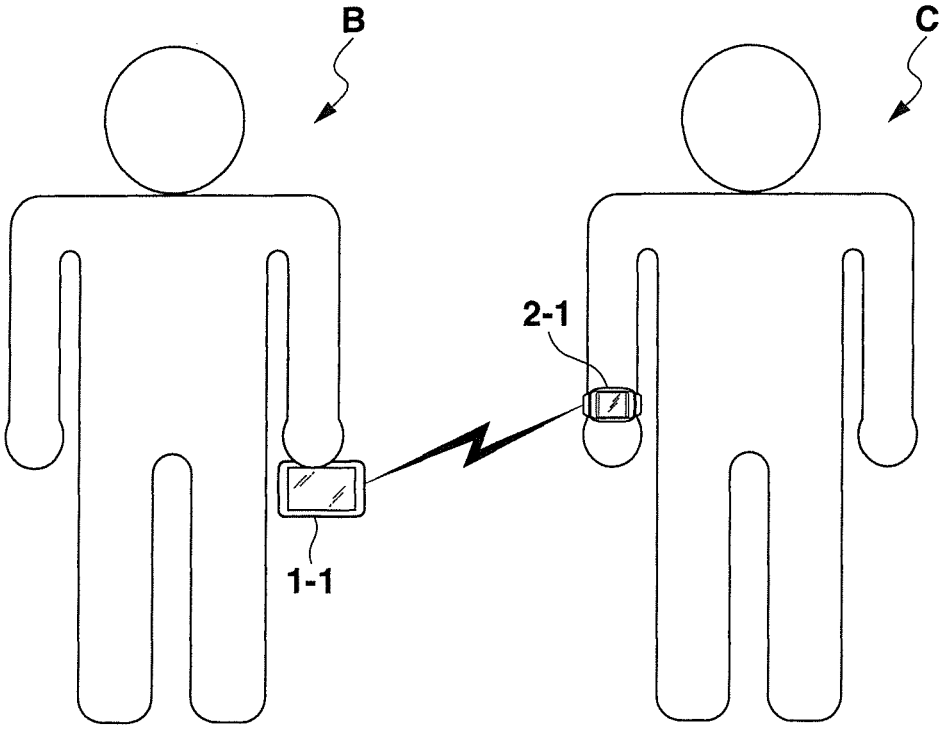
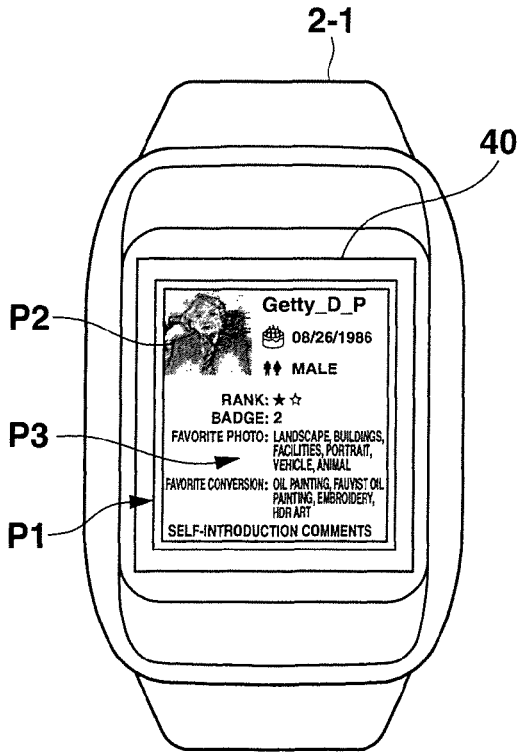


FIG.18A

FIG.18B



SOCIAL NETWORK SERVICE SYSTEM, IMAGE DISPLAY METHOD, AND COMPUTER-READABLE STORAGE MEDIUM

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is based upon and claims the benefit of priority from prior Japanese Patent Applications No. 2012-078949, filed Mar. 30, 2012; and No. 2013-039817, filed Feb. 28, 2013, the entire contents of all of which, are incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an SNS (social network service) system which performs an image processing.

2. Description of the Related Art

In recent years, a members-only communication service (social network system, hereinafter referred to as SNS) has been gaining in popularity. In general, the SNS system is constructed not by a tree structure but by a semi-lattice structure. In the semi-lattice structure, unlike a tree structure in which all lower-level sets are included in an upper-level set, a structural element of one set is included in a plurality of lower-level sets, and sets with interlaced inclusive relations are constituted.

In the SNS system, there is a concept of "friends" (see, e.g. Jpn. Pat. Appln. KOKAI Publication No. 2006-309660), and "friends" are one of sets.

For example, FIG. **1** illustrates a friend network in a case where attention is paid to member "A". Member "B" (hereinafter the word "member" is omitted, and simply "A", "B", . . . , are referred to), "C" and "D" have a friendship, "B1" and "B2" have a friendship with "B", and "B11" and "B12" have a friendship with "B1". Further, "D1" has a friendship with "D", and "D11" and "D12" have a friendship with "D1".

As indicated by "r1" in FIG. **1**, there may be a case in which friend "D12" of friend "D1" of "D", that is a friend of "A", has a friendship with "A".

In the meantime, in such an SNS, there are many cases in which members show photos, which are stored on a server, to each other (see, e.g. Jpn. Pat. Appln. KOKAI Publication No. 2008-242639).

In the description below, a member uploads a photo to a server, and the photo itself, which is made public on the Internet as such, or an image, which is created by subjecting the photo to image processing and is made public on the Internet, is referred to as "work".

A member prepares, in his/her own home page (also referred to as "my page"), a top screen having his/her own top image. The top screen is a so-called home screen.

In the SNS system, a picture conversion service for image data is provided as an image processing. Thus, there are many members who adopt images which are created by subjecting the top images to the picture conversion. There are many types of picture conversion, such as an oil painting, thick oil painting, gothic oil painting, fauvist oil painting, water color painting, gouache painting, pastel painting, color pencil sketch, pointillism, silkscreen, drawing, and air brush. For example, if a color pencil sketch type is used for picture conversion of a member's own top image, it is highly possible that this member likes the type of color pencil sketch tone, and it can be supposed that this member will have a friendship with a member who likewise adopts the color pencil sketch tone for picture conversion of the top image, and it is considered that these members will make a group.

FIG. **2** illustrates an example in which members, including members who have no friendship, are grouped. Symbol "g1" denotes a group which is a set having a predetermined objective. The group "g1" includes members, such as "A" and "F", who have no friendship.

Jpn. Pat. Appln. KOKAI Publication No. 2006-99753, discloses a grouping technique in the SNS. Jpn. Pat. Appln. KOKAI Publication No. 2006-99753 provides a grouping method of names and keywords, which is characterized by including a step of accepting an input from an input module of names and keywords, a step of producing a cooccurrence matrix of the input names and keywords, and a step of clustering the names and keywords in the produced cooccurrence matrix.

In the prior art, however, an SNS relating to a picture conversion technology and a technique relating to such an SNS have not been proposed. In Jpn. Pat. Appln. KOKAI Publication No. 2006-99753, based on a personal name or company name, a product name, a document name, etc., that is, based on text data, grouping is executed by language processing or syntax analysis. In Jpn. Pat. Appln. KOKAI Publication No. 2006-99753, there is no concept of executing grouping based on image data. Thus, in the actual situation, it has not been practiced to increase an interest by merging a picture conversion technology into an SNS or, conversely, by merging an SNS into a picture conversion technology.

BRIEF SUMMARY OF THE INVENTION

The present invention has been made in consideration of the above-described situation, and the object of the invention is to provide a social network service system which can increase an interest by merging an image processing technology into the SNS, an image display method, and a computer-readable storage medium.

According to the present invention, a social network service system includes a server wherein a terminal of a member is connectable to the server. The server includes a memory configured to store a home screen including top image data for each member, a selector configured to select a type of an image processing, and a processor configured to process, at a predetermined timing, the top image data of a member in accordance with the type of the image processing which is selected by the selector. According to the present invention, an interest can be increased by merging an image processing technology into an SNS, or by merging an SNS into an image processing technology.

Additional objects and advantages of the invention will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and obtained by means of the instrumentalities and combinations particularly pointed out hereinafter.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate embodiments of the invention, and together with the general description given above and the detailed description of the embodiments given below, serve to explain the principles of the invention.

FIG. **1** illustrates a friend network in a case where attention is paid to member "A".

FIG. **2** illustrates an example in which members, including members who have no friendship, are grouped.

FIG. **3** is a block diagram illustrating a main part of the structure of a server which realizes an SNS site.

FIG. **4** is a block diagram illustrating the details of a member area.

FIG. **5** illustrates contents of member attribute information.

FIG. **6** illustrates contents of image attribute information.

FIG. **7** is a flowchart illustrating a process procedure of a top screen creation process.

FIG. **8**A and FIG. **8**B are flowcharts illustrating process procedures of a top image creation process for each friend.

FIG. **9** is a flowchart illustrating the process procedure of a grouping process.

FIG. **10** is a flowchart illustrating the process procedure of an upload/posting process.

FIG. **11** is a flowchart illustrating the process procedure of a browse process.

FIG. **12** is a flowchart illustrating the process procedure of a top screen update process.

FIG. **13** illustrates a top screen and a top image.

FIG. **14** illustrates another top screen and another top image.

FIG. **15** is a block diagram illustrating the whole structure of the SNS system according to an embodiment of the invention.

FIG. **16**A, FIG. **16**B, and FIG. **16**C illustrate general views of a terminal and wrist terminal.

FIG. **17**A and FIG. **17**B illustrate states in which the terminal and wrist terminal are used.

FIG. **18**A and FIG. **18**B illustrate display examples of the wrist terminal.

DETAILED DESCRIPTION OF THE INVENTION

Embodiments of the present invention will now be described with reference to the accompanying drawings. The embodiments provide an image processing service to increase an interest. An example of the image processing service includes a picture conversion service. The picture conversion service includes many types of picture conversion. One type of the picture conversion includes changing a tone of an original image.

FIG. **3** is a block diagram illustrating a main part of the structure of a server **11** which realizes an SNS site **10**. The server **11** includes a member area **100**, a common area **200** and a control area **300**.

As illustrated in detail in FIG. **4**, the member area **100** is an area which is provided for each registered member, and stores a member ID **102** for identifying the member, and various member attribute information **104** of each member in association with the member ID **102**.

The member attribute information **104** includes, for example, as shown in FIG. **5**, a name **104**A, a handle name **104**B, a gender **104**C, an age **104**D, a region **104**E, a member type **104**F, and, as other member unique information, a top screen type **104**G, a number of times of conversion and type of conversion **104**H, a number of times of browsing and type of browsed works **104**I, a friend list **140**J, a group list **104**K, and others **104**L. The member type **104**F is a free member who is simply registered for free, a paid member who is registered with payment, or a premium member who paid a special membership fee.

In the a number of times of conversion and type of conversion **104**H, the type of picture tone selected when the member executed picture conversion and the number of times of picture conversion are recorded. The type of picture tone, which has most frequently been selected by the member, is stored in $\mathbf{104H}_1$. In addition, in the number of times of browsing and type of browsed works **104**I, the type of picture tone, which has most frequently been browsed by the member among published works, and the number of times of browsing are recorded. The type of picture tone, which has most frequently been browsed by the member, is stored in $\mathbf{104I}_1$.

In the friend list **140**J, the ID of a friend member (friend) of the present member, is stored. In the group list **104**K, a classified group name, to which the present member belongs, is stored. The group name is a name of a group of each type of picture conversion tone, such as oil painting, water color painting, pastel painting, etc. The group is not limited to the type of picture conversion. For example, the group may be a group of members who use picture-converted images as the top images P**2**, or a group of members who do not use picture-converted images as the top images P**2**. The group is a set of members who have a predetermined common item and are logically connected on the network.

In addition, the member area **100** (FIG. **4**) includes an upload image buffer area **106** in which image data of photos uploaded by the member is stored; a work buffer area **108** in which picture-tone images (works), which have been picture-converted in the SNS site **10**, are stored; a download work buffer area **110** which downloads and stores works of other members; a top screen storage area **111** in which the top screen P**1** is stored (the area **111** includes a top image storage area **112** in which the top image P**2** is stored, and a profile storage area **114** in which a profile P**3** of the member is stored); a friend list area **116** in which member IDs of members, who are friends of the present member, are stored; and a top-screens-for-friends area **118** in which the top screens P**1** of the present member, which are displayed on the terminals of the friends stored in the friend list area **116**, are stored (area **118** includes an N-number of areas $\mathbf{118}_1$ to $\mathbf{118}_N$ divided for respective friends).

The common area **200** in FIG. **3** is an area which is provided common to all members. The common area **200** includes a work area **202** in which many works, which were created by converting images uploaded by members to picture tones, are stored.

Each of works stored in the work area **202** includes image data **208**, an image ID **204** for identifying the work, and image attribute information **206** indicative of the attribute of each image.

As shown in FIG. **6**, the image attribute information **206** includes a member ID **206**A indicative of the poster of the work; date information **206**B of, e.g. a date of creation or a date of posting; image type information **206**C such as a size of image data and type of picture tone; browse request number (access number) information **206**D indicative of the number of times of browsing of the work; download number information **206**E indicative of the number of times of download of the work; point information **206**F indicative of the evaluation of the work; tag information **206**G for attaching a tag indicating what the work relates to, such as a person, nature, flower, morning glory, etc.; grouping information **206**H indicative of a group if the work belongs to the group; and other information **206**I which is unique to the work. These information items are stored together with the image ID **204** and image data **208**.

From the member ID **206**A, the creator of the work is understood, and it can be determined whether the creator is a free member, a paid member or a premium member. In addi-

tion, from the tag information **206**G, the work can be categorized. Furthermore, from the grouping information **206**H, the work can be grouped.

The control area **300** shown in FIG. **3** includes a picture conversion processor **302**, a parameter table **304**, a display controller **308**, an evaluation controller **310**, a member management module **312**, and a grouping controller **314**.

The picture conversion processor **302** executes a picture conversion process for changing a tone of image data, which is stored in the upload image buffer area **106**, to a picture-tone. The parameter table **304** stores parameters for picture conversion, which are referred to when the picture conversion process is executed. The display controller **308** stores a control program for displaying the work on the screen.

The evaluation controller **310** evaluates the works, which are stored in the work buffer area **108** of the member area **100**, in accordance with the number of times of access, and gives points to each work. The member management module **312** manages the members by the member IDs, and controls respective services for the free member, paid member and premium member. The member management module **312** also controls the SNS function of the SNS site **10**. The grouping controller **314** executes a process of grouping members, as will be described later with reference to FIG. **9**.

In addition, the server **11** is provided with a CPU **20** and a display buffer **30**. The CPU **20** controls the entirety of the server **11**, based on various control programs stored in the control area **300**, and executes various processes which are necessary for displaying many works in a table format on the Internet. Besides, the CPU **20** includes a graphic accelerator **22** for executing a high-level graphic process. By the graphic accelerator **22**, images can be categorized and displayed, as will be described later, by simply designating some conditions from driver software. In the meantime, the above-described driver software is, for example, a publicly known open GL with a high general-purpose applicability and an extension library for using the open GL.

The display buffer **30** is a working memory for developing images for display, when the CPU **20** displays many works in a table format.

Next, concrete operations of the image display system of the present embodiment will be described with reference to flowcharts.

To begin with, referring to FIG. **7**, a top screen creation flow, which is executed by the server **11**, is described. Although not illustrated, a member terminal of the SNS is connected to the server **11** over a network. Responding to a request from the member terminal, the server **11** creates a top screen P**1** of the present member (step S**102**). In addition, the server **11** accepts upload of an image (photo) from the member terminal and stores the image (photo) in the upload image buffer area **106** (step S**104**). Further, the server **11** determines the presence/absence of an instruction from the member as to whether the uploaded image is to be used as the top screen P**1** as such or not (step S**106**).

When an instruction ("as such") to use the image as such has been received from the member, the server **11** prompts the member to select any one of the images of the member, which are stored in the upload image buffer area **106**, as the top image P**2** in accordance with an operation from the member terminal (step S**108**). Conversely, when an instruction to use a picture-converted image, instead of using the uploaded image as such, has been received from the member, the server **11** prompts the member to select a top image P**2** from the work buffer area **108** which stores picture-tone images (works) which were created by picture-converting the top image P**2** in the SNS site **10** (step S**120**). Subsequently, the server **11** sets the top image P**2**, which has been selected in step S**108** or step S**120**, in the top screen P**1** (step S**122**).

FIG. **13** illustrates an example of the top screen P**1**. The top screen P**1** is composed of the top image P**2** which is set in a part of the top screen P**1**, and profile contents (character strings) P**3** of the member, such as rank, badge, favorite photo and favorite conversion. In step S**122**, the server **11** executes a process of setting the top image P**2** in the top screen P**1**. Thereafter, as illustrated in FIG. **14**, the server **11** executes a group update process (step S**124**), and updates the group into which the present member is classified.

FIG. **14** illustrates a state in which members are being grouped in accordance with the type of picture tone of the top image data P**2** of the top screen P**1** of the present member.

FIG. **8**A is a flowchart illustrating a process procedure of a top image creation process for each friend. The server **11** reads out the top image P**2** from the top image storage area **112** in the present member's own member area **100** in response to a request from the member terminal (step S**202**).

Subsequently, the server **11** detects the conversion type, i.e. any one of the above-described oil painting, water color painting, pastel painting, etc., of the top image P**2** which is set in the top screen P**1** of "friend 1" who is the first friend stored in the top-screens-for-friends area $\mathbf{118}_1$ of the member area **100** (step S**204**).

Thereafter, the server **11** picture-converts the top image P**2** in the top screen P**1** of the present member, which has been read out in step S**202**, by using the conversion type for "friend 1", which has been detected in step S**204**, and stores the picture-converted image in the area $\mathbf{118}_1$ of the top-screens-for-friends area **118** (step S**206**). In addition, the server **11** detects the conversion type of the top image P**2** in the top screen P**1** of "friend 2" (step S**208**), picture-converts the top image P**2** in the top screen P**1** of the present member, which has been read out in step S**202**, by using the conversion type for "friend 2", which has been detected in step S**208**, and stores the picture-converted image in the area $\mathbf{118}_2$ of the top-screens-for-friends area **118** (step S**210**). Similarly, the server **11** detects the conversion type of the top image P**2** in the top screen P**1** of "friend N" (step S**212**), picture-converts the top image P**2** in the top screen P**1** of the present member, which has been read out in step S**202**, by using the conversion type for "friend N", which has been detected in step S**212**, and stores the picture-converted image in the area $\mathbf{118}_N$ of the top-screens-for-friends area **118** (step S**214**).

Thus, by the execution of the above process illustrated in the flowchart of FIG. **8**A, for example, if the present member is "A", the top screen P**1** of member "A" including the top image P**2** of member "A", which has been converted by using the same conversion type as the conversion type of the top image P**2** of each of friends "1" to "N", is stored in the areas $\mathbf{118}_1$ to $\mathbf{118}_N$ of the top-screens-for-friends area **118**.

FIG. **8**B is a flowchart illustrating another process procedure of the top image creation process for each friend. The server **11** reads out the top image P**2** from the top image storage area **112** in the present member's own member area **100** in response to a request from the member terminal (step S**302**). Subsequently, based on first-rank information $\mathbf{104}H_1$ included in the number of times of conversion and type of conversion **104**H in the member attribute information **104** of "friend 1" who is the first friend stored in the top-screens-for-friends area $\mathbf{118}_1$ of the member area **100**, the server **11** detects the conversion type, i.e. any one of the above-described oil painting, water color painting, pastel painting, etc., which is the conversion type with a largest number of times of conversion (step S**304**).

Thereafter, the server **11** picture-converts the top image P**2** in the top screen P**1** of the present member, which has been read out in step S**302**, by using the conversion type for "friend 1", which has been detected in step S**304**, and stores the picture-converted image in the area **118**$_1$ of the top-screens-for-friends area **118** (step S**306**). In addition, the server **11** detects the conversion type with a largest number of times of conversion of "friend 2" (step S**308**), picture-converts the top image P**2** in the top screen P**1** of the present member, which has been read out in step S**302**, by using the conversion type for "friend 2", which has been detected in step S**308**, and stores the picture-converted image in the area **1182** of the top-screens-for-friends area **118** (step S**310**). Similarly, the server **11** detects the conversion type with a largest number of times of conversion of "friend N" (step S**312**), picture-converts the top image P**2** in the top screen P**1** of the present member, which has been read out in step S**302**, by using the conversion type for "friend N", which has been detected in step S**312**, and stores the picture-converted image in the area **118**N of the top-screens-for-friends area **118** (step S**314**).

Thus, by the execution of the above process illustrated in the flowchart of FIG. **8**B, for example, if the present member is "A", the top screen P**1** of member "A" including the top image P**2** of member "A", which has been converted by using the same conversion type as the conversion type with a largest number of times of conversion of each friend, is stored in the areas **1181** to **118**N of the top-screens-for-friends area **118**.

FIG. **9** is a flowchart illustrating a process procedure of a grouping process. The server **11** retrieves member IDs of friends or members in a predetermined range (step S**402**). Then, the server **11** groups the retrieved member IDs in accordance with each image type indicated by the information stored in the image type information **206**C (step S**404**). Subsequently, the server **11** updates the group list **104**K in the various member attribute information **104** of each member (step S**406**). Accordingly, by the execution of the above process illustrated in the flowchart of FIG. **9**, friends of a certain member or members in a predetermined range are grouped in accordance with image types, such as an oil painting group, a water color painting group, a pastel painting group, etc. Thereafter, the server **11** sends information to the grouped members (step S**408**). The creator of this information that is to be sent may be any one of the respective members and the administrator of the server **11**.

Thus, with the above process illustrated in the flowchart of FIG. **9** being executed, and with information being sent to the grouped members, the following operations and advantageous effects can be obtained.

<Operations>

(1) Members are grouped in accordance with each conversion type, which is used on the top screen P**1**, thereby performing sharing of works and friend recommendation.

(2) Members are grouped in accordance with each conversion type, which is used on the top screen P**1**, thereby notifying, for example, a water color painting contest if the conversion type is water color painting.

(3) Members are grouped in accordance with each conversion type with a large number of times of use by members in the previous day (or previous log-in), in the previous month, etc., thereby performing sharing of works and friend recommendation.

(4) In accordance with each conversion type with a large number of times of use by members in the previous day (or previous log-in), in the previous month, etc., a guide of, for example, a water color painting contest is notified if the conversion type is water color painting.

(5) Members are grouped in accordance with each conversion type which is registered as a favorite conversion type by members, thereby performing sharing of works and friend recommendation.

(6) In accordance with each conversion type which is registered as a favorite conversion type by members, a guide of, for example, a water color painting contest is notified if the conversion type is water color painting.

<Advantageous Effects>

As a result, in order to activate communication through converted images and works and to create a community, and to share favorite images, members are internally grouped by the frequently used conversion type or favorite conversion type, and sharing of works and event guides can be notified to each group and communication and creation of communities can be efficiently promoted.

In addition, a gallery or categorization according to each conversion type can be realized, and as the number of conversion types is increasing hereafter, members can be efficiently and effectively grouped according to favorites, and communication and communities can be activated.

FIG. **10** is a flowchart illustrating the process procedure of an upload/posting process. The server **11** accepts upload of an image (photo) from a member terminal, and stores the image (photo) in the upload image buffer area **106** (step S**501**). In addition, the server **11** selects the type of picture tone for conversion, in accordance with a selection instruction from the member terminal (step S**502**). Using the selected type, the server **11** executes picture conversion of the uploaded image (step S**503**). Then, the server **11** counts the selected type of picture tone, counts up the number of times of this type, and stores the counted number of times in the number of times and type of picture conversion **104**H (step S**504**).

Consequently, since such a case may arise that the content of area **104**H$_1$ in which the type of picture tone with a largest number of times of selection varies, the content of area **104**H$_1$ is updated (step S**505**). In addition, if a new picture tone is selected, the group will also vary and thus the group is updated (step S**506**).

Thereafter, the image, which has been picture-converted in step S**503**, is stored in the work buffer area **108** and is stored in the work area **202** (step S**507**). In addition, as the image attribute information **206**, the member ID **206**A indicative of the poster of the work and the date information **206**B indicative of, e.g. the date of posting are written (step S**508**).

Accordingly, by the execution of the above process illustrated in the flowchart of FIG. **10**, in the number of times of conversion and type of conversion **104**H, the content of area **104**H$_1$, in which the type of picture tone with a largest number of times of selection varies is stored, is updated, and the number of times and the type are stored.

FIG. **11** is a flowchart illustrating the process procedure of a browse process. The server **11** transmits a table-of-works display screen to the member terminal (step S**601**). In accordance with a selection instruction from the member terminal, the server **11** selects any one of the works from the table-of-works display screen (step S**602**). Subsequently, the server **11** executes such control that the original image, which is the image before the picture conversion of the selected work, is displayed on the member terminal, and the selected work is downloaded (step S**603**). Then, the server **11** counts the type of the downloaded picture tone, counts up the number of times of this type, and stores the counted number of times in the number of times of browsing and type of browsed works **104**I (step S**604**).

Consequently, since such a case may arise that the content of area **104**I$_1$ in which the type of picture tone with a largest

number of times of browsing varies, the content of area **104**I_1 is updated (step **S605**). In addition, if a new work is downloaded, the group will also vary and thus the group is updated (step **S606**).

Accordingly, by the execution of the above process illustrated in the flowchart of FIG. **11**, in the number of time of browsing and type of browsed works **104**I, the content of **104**I_1, in which the type of picture tone with a largest number of browsing varies is stored, is updated, and the number of times and the type are stored.

FIG. **12** is a flowchart illustrating the process procedure of a top screen update process. The server **11** executes the process illustrated in this flowchart at a predetermined time, for example, once a day at midnight. Specifically, the server **11** reads out information written in the most frequent conversion type **104**H_1, and checks the first-rank type of picture tone which has been most frequently selected for picture conversion by the present member (step **S701**). In addition, the server **11** reads out information written in the most frequent browse type **104**I_1, and checks the first-rank type of picture tone which has been most frequently browsed by the present member (step **S702**). Next, the server **11** picture-converts the top image data which is the image data representative of the top image **P2**, by using the most frequent type of picture tone (step **S703**). The most frequent type, in this context, refers to the type of picture conversion, which corresponds to the greater of the number of times checked in step **S701** and the number of times checked in step **S702**.

In the present embodiment, the type of picture tone for conversion is determined by using both the number of times of picture conversion with respect to each type, and the number of times of browsing with respect to each type. Alternatively, the type of picture tone for conversion may be determined by using only the number of times of picture conversion with respect to each type or only the number of times of browsing with respect to each type.

Thereafter, the top image **P2**, which is represented by the top image data, is set in the top screen **P1** (step **S704**). Therefore, according to the present embodiment, the top image **P2** of the top screen **P1** of the member himself/herself is automatically picture-converted by the type of picture conversion that was used by the member himself/herself (the type stored in **104**H_1) or by the type of picture conversion that was browsed by the member himself/herself (the type stored in **104**I_1). Specifically, as illustrated in FIG. **13**, the top image **P2** of the top screen **P1** of the member himself/herself is automatically picture-converted to pastel painting, pencil sketch or oil painting. Thus, an interest can be increased by merging a picture conversion technology into an SNS or by merging an SNS into a picture conversion technology.

In the meantime, in general, an SNS functions among closed members, but such a configuration may be adopted that general users, who are not registered as members, can browse works.

<Advantageous Effect of the Embodiment>

According to the present embodiment, since the top image data of a member is automatically converted to a picture-tone image data which suits the member's taste, such an advantage can be obtained that an interest does not decrease for both the member himself/herself and friends.

According to the present embodiment, members, who use the same type of picture conversion as the picture tone of the top image data of the present member, can be grouped, such an advantage can be obtained that the present member is easily associated with members having the same taste. In addition, such an advantage can be obtained that events, for instance, which are suited to the members of the group, can easily be notified to these members.

FIG. **15** is a block diagram illustrating the whole structure of the SNS system according to the present embodiment.

The SNS site **10** including the server **11** is connected to terminals **1-1**, **1-2**, **1-3**, . . . , of members via the Internet **500**. The terminals **1-1**, **1-2**, **1-3**, . . . , are, for instance, smartphones or personal computers. In addition, numerals **2-1**, **2-2**, **2-3**, . . . , denote wristwatch-type wrist terminals which are, when used, attached to the arms, and the wrist terminals **2-1**, **2-2**, **2-3**, . . . , are wirelessly connected to the terminals **1-1**, **1-2**, **1-3**, ...

The relationship between the terminal **1-1** and wrist terminal **2-1** is described. As illustrated in FIG. **16**A, the terminal **1-1** and wrist terminal **2-1** are wirelessly connected by, e.g. Bluetooth (trademark), and data can be exchanged between the terminal **1-1** and wrist terminal **2-1**. FIG. **16**B illustrates a state in which a profile screen **P1** including a profile image **P2**, which is the top image, is displayed on a display section **31** of the smartphone-type terminal **1-1**. FIG. **16**C illustrates a state in which a profile image **P2** is displayed on a display section **40** of the wrist terminal **2-1**.

At this time, the display area of the display section **31** of the smartphone-type terminal **1-1** is different from the display area of the display section **40** of the wrist terminal **2-1**, and the display area of the display section **40** of the wrist terminal **2-1** is much smaller than the display area of the display section **31** of the smartphone-type terminal **1-1**. Thus, as is understood from the comparison between the display state of FIG. **16**B and the display state of FIG. **16**C, the display section **31** of the smartphone-type terminal **1-1** is caused to display the entirety of the profile screen **P1** that is the home screen, but the display area of the display section **40** of the wrist terminal **2-1** is caused to display only a main part, i.e. about ⅔ of an upper part, of the profile screen **P1** including the profile image **P2**.

According to this display mode, on the display section **40** of the wrist terminal **2-1** which has a small display area, the profile image **P2** can be clearly displayed, without being extremely reduced in size, and the profile screen **P1** can be displayed.

Needless to say, in the wrist terminal **2-1**, if a scroll operation is performed, a lower part of the profile screen **P1**, which is not displayed in FIG. **16**C, can be displayed.

FIG. **17**A and FIG. **17**B illustrate states in which the terminal **1-1** and wrist terminal **2-1** are used. In FIG. **17**A, member "A" possesses the terminal **1-1** and connects the terminal **1-1** to the SNS site **10** via a mobile phone network or the Internet, and also possesses the wrist terminal **2-1** and receives part of information, such as profile information of friend members or e-mails, by the wrist terminal **2-1**.

According to this mode of use, even if the wrist terminal **2-1** does not have a function of connection to the Internet **500**, the wrist terminal **2-1** can receive, for example, profile information of friend members, e-mails, etc.

In the example illustrated in FIG. **17**B, when member "B" possesses the terminal **1-1** and member "C", who does not possesses the terminal **101**, possesses the wrist terminal **2-1**, if member "B" and member "C" come close to each other, data exchange is enabled between the terminal **1-1** of member "B" and the wrist terminal **2-1** of member "C".

According to this mode of use, even if member "C" does not possess the terminal **1-1** which has the function of connection to the Internet **500**, member "C" can obtain information which is acquired via the Internet **500**.

Next, display examples of the wrist terminal **2-1** are described. Usually, as illustrated in FIG. **18**A, the wrist terminal **2-1** executes time display **P4** including the present

year/month/day, a day of the week, and hour/minute. By switching the display mode, the wrist terminal **2-1** displays, as illustrated in FIG. **18**B, the profile screen P**1** of the present member himself/herself or a friend member. By detecting that a friend member has come near, the profile of the friend member may automatically be displayed.

Even with this wrist terminal **2-1**, a work, which is image data converted to a picture tone, can be browsed, and the number of times of browsing on the wrist terminal **2-1** is included in the above-described number of times of browsing.

Thereby, even if a member puts the terminal in a bag or the like, if the member wears a wrist terminal as a wristwatch, the member can easily confirm the profile or profile image of the member himself/herself or a friend member, or browse the work. In addition, when the picture tone of the profile screen of the friend member has been changed, a notification can be received or the profile image of the friend member can be automatically displayed.

Although the embodiments of the invention have been described, the present invention is not limited to these embodiments. The present invention includes inventions disclosed in patent claims and the scope of equivalents thereof. The picture conversion service is explained as an example of the image processing service and the tone change is explained as an example of the picture conversion. The picture conversion may include other types of conversion. For example, the type of the picture conversion may include a conversion of a facial picture to a portrait painting, a conversion of a still picture to a moving picture, a conversion of a two-dimensional image to a three-dimensional image. The type of picture conversion may include a conversion to a smiling face image, a conversion to a crying face, and a conversion to an angry face, a conversion to a moving picture with a different frame rate, time, and a moving speed, or the like.

<Advantageous Effect of the Embodiment>

According to the present embodiment, the profile screen which displays the profile of a member can be changed, on a friend-by-friend basis, to a screen which is converted to a picture-tone image that suits the taste of each friend. Specifically, such an advantage is obtained that different profile images of the same member can be viewed from respective friends.

While the description above refers to particular embodiments of the present invention, it will be understood that many modifications may be made without departing from the spirit thereof. The accompanying claims are intended to cover such modifications as would fall within the true scope and spirit of the present invention. The presently disclosed embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims, rather than the foregoing description, and all changes that come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein. For example, the present invention can be practiced as a computer readable recording medium in which a program for allowing the computer to function as predetermined means, allowing the computer to realize a predetermined function, or allowing the computer to conduct predetermined means.

What is claimed is:

1. A server executing a processing for a terminal of a member in a social network service system to which terminals of a plurality of members are connectable, the server comprising:

a memory configured to store a home screen comprising top image data of the member;

a selector configured to select a type of an image processing for the member; and

a processor configured to process the top image data to be displayed on the home screen of the member in accordance with the type of the image processing which is selected by the selector, wherein the processor is configured to count the type of the image processing which is selected by the selector for each type, and process the top image data of the member based on a largest number of types selected by the member during a predetermined period.

2. The server of claim **1**, wherein the processor is configured to group members having top image data of the same type as the type of the image processing for the top image data of the member.

3. The server of claim **1**, wherein an image processing executed by the processor is a plurality of types of picture conversion processing.

4. A display method for a social network service system in which each member has its own home screen including top image data, the display method comprising:

storing a home screen comprising top image data (a profile screen) for each member;

selecting a type of an image processing;

processing the top image data to be displayed on the home screen of the member in accordance with the selected type of the image processing; and

counting the selected type of the image processing,

wherein the processor is configured to process the top image data based on a largest number of the counted type during a predetermined period.

5. A server executing a processing for a terminal of a member in a social network service system to which terminals of a plurality of members are connectable the server comprising:

a memory configured to store a home screen comprising top image data of the member;

a selector configured to select a type of an image processing for the member; and

a processor configured to process top image data to be displayed on a home screen of the member, wherein the processor is configured to count types of image processing selected by a friend member of the member for each friend member, and process the top image data of the member based on a largest number of types selected by the friend member during a predetermined period.

6. The server of claim **5**, wherein the processor is configured to process top image data to be displayed on a home screen of the member for every friend member based on a largest number of types selected by the friend member to be stored in the memory.

7. The server of claim **5**, wherein the server is configured to disclose image data uploaded from terminals of a plurality of members including a friend member to the members, and

the processor is configured to count types of image processing of image data of the member browsed by the friend member, and process top image data of the member based on an image processing with the largest number of types browsed by the friend member during a predetermined period.

8. The server of claim **5**, wherein the home screen of the member comprises a profile screen of the member, and the top image data comprises a profile image of the member.

9. The server of claim **5**, wherein the processor is configured to group members having top image data of the same type as the type of the image processing for the top image data of the member.

10. The server of claim 5, wherein an image processing executed by the processor is a plurality of types of picture conversion processing.

11. A display method for a social network service system wherein image data is uploaded to a server from terminals of a plurality of members and is disclosed to members comprising a friend member, the display method comprising:

selecting a type of an image processing;

processing top image data to be displayed on a home screen of a member in accordance with the type of the image processing which is selected by the selector;

counting the type of the image processing selected by the friend member for each member; and

processing the top image data based on a largest number of types selected by the friend member during a predetermined period.

12. A display method for a social network service system wherein image data is uploaded to a server from terminals of a plurality of members and is disclosed to members, the display method comprising:

storing a home screen comprising top image data of the member for each member;

selecting a type of an image processing for the member;

processing top image data to be displayed on the home screen of the member;

counting types of the image processing of the browsed image data of the member for each type; and

processing the top image data of the member based on a largest number of types browsed during a predetermined period.

13. A server executing a processing for a terminal of a member in a social network service system disclosing image data uploaded to a server from terminals of a plurality of members to the members the server comprising:

a memory configured to store a home screen comprising top image data of the member for each member;

a selector configured to select a type of an image processing for the member; and

a processor configured to process top image data to be displayed on the home screen of the member, wherein the processor is configured to count types of image processing of the image data of the member for each type, and process the top image data of the member based on a largest number of types browsed during a predetermined period.

14. The server of claim 13, wherein the processor is configured to group members having top image data of the same type as the type of the image processing for the top image data of the member.

15. The server of claim 13, wherein an image processing executed by the processor is a plurality of types of picture conversion processing.

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